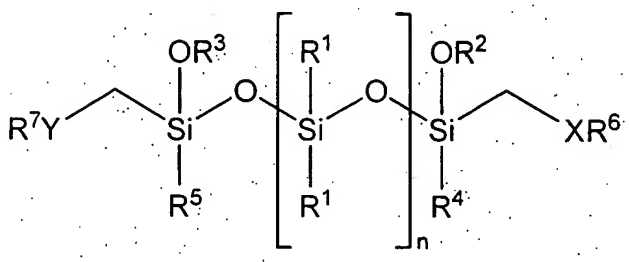
What is claimed is:

1. An α-silyl terminated polydiorganosiloxane having the following general formula (I):



(I)

wherein

the radicals R^1 are selected from the group consisting of straight-chain aliphatic radicals, branched aliphatic radicals, cycloaliphatic radicals, aryl radicals, and aralkyl radicals, each radical R^1 containing 1 to 12 carbon atoms and optionally one or more heteroatoms and optionally being substituted with halogen, the radicals R^1 being identical or different within the polydiorganosiloxane;

the radicals R^2 and R^3, which are identical or different, are selected from the group consisting of straight-chain aliphatic radicals and branched aliphatic radicals;

the radicals R^4 and R^5, which are identical or different, are selected from the group consisting of straight-chain aliphatic radicals, branched aliphatic radicals, OR^2 and OR^3, wherein R^2 and R^3 are defined as above;

the radicals X and Y, which are identical or different, are selected from the group consisting of O, S, N, PR^8 and NR^8,

wherein R^8 is selected from the group consisting of H, $-(C=O)NH-R^9$, $-(C=O)-R^9$ and $-(SO_2)-R^9$,

wherein R^9 is selected from the group consisting of aliphatic radicals, cycloaliphatic radicals, and aryl radicals, each radical R^9 containing 1 to 12 carbon atoms and optionally containing one or more heteroatoms;

the radicals R^6 and R^7, which are identical or different, are selected from the group consisting of straight-chain aliphatic radicals with 1 to 12 carbon atoms, branched aliphatic radicals with 1 to 12 carbon atoms, cycloaliphatic radicals, cycloaliphatic radicals containing one or more heteroatoms, aryl radicals, aryl radicals containing one or more heteroatoms, =C=O, and

$-(C=O)R^{10}$, wherein

R^{10} is selected from the group consisting of straight-chain aliphatic radicals with 1 to 12 carbon atoms, branched aliphatic radicals with 1 to 12 carbon atoms, and $Z\text{-}R^{11}$, wherein

Z is selected from the group consisting of S, O, PR^8 and NH and

R^{11} is selected from the group consisting of straight-chain aliphatic radicals with 1 to 12 carbon atoms and branched aliphatic radicals with 1 to 12 carbon atoms;

n is from 10 to 10000; and

salts of organic acids, inorganic acids or quaternization products thereof.

2. The α-silyl terminated polydiorganosiloxane of claim 1, wherein

the radicals R^1 are selected from the group consisting of straight-chain alkyl radicals with 1 to 8 carbon atoms wherein optionally one or more halogen atoms are substituted for hydrogen atoms, branched alkyl radicals with 1 to 8 carbon atoms wherein optionally one or more halogen atoms are substituted for hydrogen atoms, 5-membered and 6-membered aryl radicals optionally containing one or more heteroatoms and wherein optionally one or more halogen atoms are substituted for hydrogen atoms, the radicals R^1 being identical or different within the polydiorganosiloxane.

3. The α-silyl terminated polydiorganosiloxane of claim 1, wherein

the radicals R^2 and R^3, which are identical or different, are selected from the group consisting of straight-chain and branched alkyl radicals with 1 to 8 carbon atoms.

4. The α-silyl terminated polydiorganosiloxane of claim 1, wherein

the radicals R^4 and R^5, which are identical or different, are selected from the group consisting of straight-chain and branched alkyl radicals with 1 to 8 carbon atoms, OR^2 and OR^3,

wherein R^2 and R^3 are identical or different and are selected from the group consisting of straight-chain and branched alkyl radicals with 1 to 8 carbon atoms.

5. The α-silyl terminated polydiorganosiloxane of claim 1, wherein

the radicals X and Y, which are identical or different, are selected from the group consisting of O, S, N, PR^8 and NR^8,

wherein R^8 is selected from the group consisting of H, $-(C=O)NH-R^9$, $-(C=O)-R^9$ and

$-(SO_2)-R^9$,

wherein R^9 is selected from the group consisting of alkyl and cycloalkyl radicals with 1 to 8 carbon atoms and 5-membered or and 6-membered aryl radicals optionally containing one or more heteroatoms.

6. The α-silyl terminated polydiorganosiloxane of claim 1, wherein

the radicals R^6 and R^7, which are the same or different, are selected from the group consisting of straight-chain and branched alkyl radicals with 1 to 8 carbon atoms, 5-membered and 6-membered cycloalkyl radicals, optionally containing one or more heteroatoms and optionally containing one or more double bonds, 5-membered and 6-membered aryl radicals, optionally containing one or more heteroatoms, =C=O, and

$-(C=O)R^{10}$, wherein

R^{10} is selected from the group consisting of straight-chain and branched alkyl radicals with 1 to 8 carbon atoms, straight-chain and branched alkylene radicals with 1 to 8 carbon atoms, $Z\text{-}R^{11}$ radicals, wherein

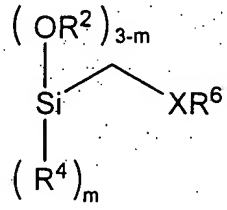
Z is selected from the group consisting of S, O, PR^8 and NH and R^{11} is selected from the group consisting of straight-chain and branched alkyl radicals with 1 to 8 carbon atoms.

7. The α-silyl terminated polydiorganosiloxane of claim 1, wherein n is between 10 and 10000 and selected to provide the α-silyl terminated polydiorganosiloxane with a viscosity of 1,000 to 900,000 mPa·s (according to Brookfield: Brookfield RVT, 23 °C, Spindle No. 7, 2.5 rpm).

8. The α-silyl terminated polydiorganosiloxane of claim 1, wherein the radical X is NH and wherein said NH radical is further reacted with one or more quaternization reagents selected from the group consisting of alkyl halides or wherein said NH radical is further reacted with one or more inorganic acids or organic acids selected from the group consisting of sulfuric acid, hydrochloric acid, benzoic acid, terephthalic acid, phthalic acid, caproic acid, stearic acid, ascorbic acid and tartaric acid.

9. A method for making an α-silyl terminated polydiorganosiloxane, the method comprising:

(A) a first step of adding one or more α-silanes of general formula (II):



(II)

m = 0 or 1

wherein

R^2 is selected from the group consisting of straight-chain and branched aliphatic radicals;

R^4 is selected from the group consisting of straight-chain or branched aliphatic radicals, OR^2 and OR^8,

X is selected from the group consisting of O, S, PR^8, NR^8 and N,

wherein R^8 is selected from the group consisting of H, $-(C=O)NH-R^9$, $-(C=O)-R^9$ and

$-(SO_2)-R^9$;

wherein R^9 is selected from the group consisting of aliphatic and cycloaliphatic radicals and aryl radicals, each radical R^9 containing 1 to 12 carbon atoms and each radical R^9 optionally containing one or more heteroatoms;

and

R^6 is selected from the group consisting of straight-chain and branched aliphatic radicals with 1 to 12 carbon atoms, cycloaliphatic radicals, optionally containing one or more heteroatoms, aryl radicals, optionally containing one or more heteroatoms, =C=O, and

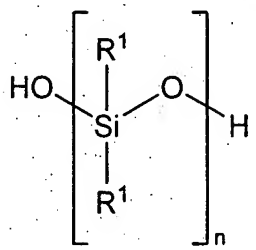
$-(C=O)R^{10}$, wherein

R^{10} is selected from the group consisting of straight-chain and branched aliphatic radicals with 1 to 12 carbon atoms and $Z\text{-}R^{11}$ radicals, wherein

Z is selected from the group consisting of S, O, PR^8 and NH and

R^{11} is selected from the group consisting of straight-chain and branched aliphatic radicals with 1 to 12 carbon atoms;

to one or more silanol terminated polydiorganosiloxanes of general formula (III):



(III)

n = 10 to 10000

wherein R^1 is selected from the group consisting of straight-chain and branched aliphatic radicals, cycloaliphatic radicals, aryl radicals, and aralkyl radicals, each radical R^1 containing 1 to 12 carbon atoms and optionally containing one or more heteroatoms and optionally being substituted with halogen, the radicals R^1 being identical or different within the polydiorganosiloxane;

to react both silanol groups; and optionally,
if X = NH

(B) a second step, wherein one or more compounds selected from the group consisting of R^9NCO, $R^9(CO)Cl$, R^9COOH, R^9SO_2Cl, $(R^9CO)_2O$ and alkylating agents,

wherein R^9 is selected from the group consisting of aliphatic radicals and aryl radicals, each radical R^9 containing 1 to 12 carbon atoms and optionally containing one or more heteroatoms;

are added to achieve a complete or partial reaction between the X radical of the product obtained in step (A) and the selected compound or compounds.

10. The method according to claim 9, wherein step (A) is carried out in the presence of a catalyst selected from the group consisting of butyl lithium, lithium alkoxides, lithium hydroxide, butyl potassium, potassium alkoxides, potassium hydroxide, butyl sodium, sodium alkoxides, sodium hydroxides and Lewis bases.

11. The method of claim 9, wherein the α-silane according to formula (II) is selected from the group consisting of
(N-cyclohexylaminomethyl)methyl-diethoxysilane,
(N-cyclohexylaminomethyl)triethoxysilane,
(N-phenylaminomethyl)methyldimethoxysilane,
(N-phenylaminomethyl)trimethoxysilane,
(methacryloxymethyl)methyldimethoxysilane,

(methacryloxymethyl)trimethoxysilane,
(methacryloxymethyl)methyldiethoxysilane,
(methacryloxymethyl)triethoxysilane,
(isocyanatomethyl)methyldimethoxysilane,
(isocyanatomethyl)trimethoxysilane, and
N-(trimethoxysilylmethyl)-O-methylcarbamate.

12. A sealant composition comprising an α-silyl terminated polydiorganosiloxane according to claim 1.

13. The sealant composition according to claim 12, further comprising one or more compounds selected from the group consisting of water scavengers, fillers, plasticizers, adhesion promoters, photosensitizers and pigments.

14. The sealant composition according to claim 12, wherein the α-silyl terminated polydiorganosiloxane comprises about 10 % by weight to about 95 % by weight of the sealant composition.

15. The sealant composition according to claim 12, further comprising a cross-linking catalyst selected from the group consisting of Lewis bases, amines, amidines, and photolatent bases.

16. The sealant composition according to claim 15 wherein the cross-linking catalyst is a photolatent base, the photolatent base being selected from the group consisting of 5-benzyl-1,5-diazabicyclo[4.3.0]nonane and 8-benzyl-1,8-diazabicyclo[5.4.0.]undecane, wherein the benzyl residue in each can further be substituted by halide, alkyl, nitril, nitro, alkoxy or aromatic residues condensed to the benzyl residue.

17. A method of using the sealant composition of claim 12, comprising
a first step of applying the sealant composition to a substrate to be sealed;
a second step of exposing the sealant composition to moisture; and
an optional third step of activating a photolatent base contained in the sealant

composition by irradiation.